

***Hitachi Ops Center Analyzer***

**Log Analysis Guide**

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- Preface -

The purpose of this document is to help on-site personnel and support staff troubleshoot **Hitachi Ops Center Analyzer** (abbreviated hereafter to Analytics). This document will help identify and isolate the causes of issues based on information collected (such as log files) when a failure occurs. This document, when used with the *Hitachi Ops Center Analyzer Troubleshooting Guide*, will ease the troubleshooting workload and allow personnel to respond to and resolve issues in a timely manner.

- Revision History -

| **No.** | **Version** | **Description** | **Date** |
| --- | --- | --- | --- |
| 1 | 2.1.0 | Hitachi Infrastructure Analytics Advisor Log　Analysis Guide created | September 29 2016 |
| 2 | 3.0.0 | Added the log file list of HIAA server in Linux | February 16 2017 |
| 3 | 4.2.0 | Changed the installer log file output destination | October 1  2018 |
| 4 | 10.0.0 | Changed product name from “Hitachi Infrastructure Analytics Advisor” to “Hitachi Ops Center Analyzer” | September 30  2019 |
| 5 | 10.8.0-01 | Added the log file of On-demand realtime monitoring on the table "Log file list (Analytics Probe)". | October 18  2021 |
| 6 | 10.8.2-00 | Added description about “VSSB” and “VSS Agent” to Glossary.  Added the log file list of VSS Agent | April 28 2022 |
| 7 | 10.9.0-00 | Added the log file list of Analyzer RAID Agent | September 29  2022 |
| 8 | 10.9.3-00 | Added the log file of Protector Backup Integration | September 4  2023 |
| 9 | 11.0.4-00 | Added the log file list of Analyzer Adapter.  Rename the log file about ETL of Analyzer viewpoint. | March 31  2025 |

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# Overview

This document describes the output formats of various types of log data, explains the formats of log messages, and provides other information necessary for analyzing log data provided by Analytics.

Use this document to investigate the causes of failures in Analytics, and to check the operation status of Analytics.

## Scope of this document

ITPD, CTSC/ESC/APSC, HDS

## Glossary

The following are acronyms and abbreviations used in this manual:

|  |  |
| --- | --- |
| Acronym or abbreviation | Full name or meaning |
| API | Application Program Interface |
| CLI | Command Line Interface |
| GUI | Graphical User Interface |
| HiRDB | Highly Scalable Relational DataBase |
| JRE | Java Runtime Environment |
| LDEV | Logical Device |
| LUN | Logical Unit Number |
| OS | Operating System |
| RAID | Redundant Arrays of Inexpensive Disks |
| SAN | Storage Area Network |
| SP | Service Pack |
| SSL | Secure Socket Layer |
| SSO | Single Sign On |
| <install-dir> | Hitachi Command Suite installation directory |
| <IAA-install-dir> | Infrastructure Analytics Advisor or Ops Center Analyzer installation directory |
| Common Component | Hitachi Command Suite common component |
| HNAS | Hitachi NAS Platform |
| NAS | Network Attached Storage |
| CIFS | Common Internet File System |
| NFS | Network File System |
| SMU | System Management Unit |
| EVS | Enterprise Virtual Server |
| HIAA | Hitachi Infrastructure Analytics Advisor or Ops Center Analyzer |
| DCA | Hitachi Data Center Analytics or Hitachi Ops Center Analyzer - Detail View |
| Analytics Probe | Hitachi Data Center Analytics Probe or Hitachi Ops Center Analyzer - probe |
| RAID-Agent | Hitachi Tuning Manager Agent for RAID |
| VSSB | Hitachi Virtual Storage Software Block |
| VSS Agent | Virtual Storage Software Agent |

## Required knowledge

* Knowledge of VMware
* Knowledge of the Common Component
* Knowledge of operating systems (Windows, Linux)
* Knowledge of volume managers
* Knowledge of file systems
* Knowledge of browsers (Internet Explorer, Firefox)
* Knowledge of SANs
* Knowledge of storage devices

## Related documents

The tables below list the related documentation required to use Analytics. Unless otherwise directed (see the # note below), use the latest version of each manual during failure analysis.

When dealing with subsystems, refer to the maintenance manual for the subsystem in question.

Table 1-1 Hitachi Ops Center Analyzer manuals (overseas editions)

|  |  |
| --- | --- |
| Document title | Notes |
| * Hitachi Ops Center Analyzer Installation and Configuration Guide * Hitachi Ops Center Analyzer User Guide * Hitachi Ops Center Analyzer REST API Reference Guide * Hitachi Ops Center Analyzer – Detail View REST API Reference Guide * Hitachi Ops Center Analyzer – Detail View Query Language User Guide |  |

Table 1-2 Other related documents

|  |  |
| --- | --- |
| Document name | Notes |
| ENGINEERING CHANGE NOTICE# | Overseas edition only |
| Hitachi Ops Center Analyzer Troubleshooting Guide | Analytics Troubleshooting Guide |
| Hitachi Tuning Manager Troubleshooting Guide | HTnM Troubleshooting Guide |
| Hitachi Tuning Manager Log Analysis Guide | HTnM Log Analysis Guide |

# Log Output Method

Information about how the user performed operations, the behavior in each component, and information exchanged with entities outside the system are recorded as trace log data. Server trace log data is output to log files (or event log files in Windows). These are provided by the system according to the severity level.

## Log output destination

The following shows the output destinations of Analytics log data.



Figure 1 Overview of processing of window operations

The following table describes the log output destinations for the processing tasks shown above.

Table 2‑1 Log output destinations of each component

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No. | Module processing | Output destination server | Output destination files | |
|  | General processing performed by Analytics Server | HIAA  Server | Log files listed in Table 2-3  Log files listed in Table 2-4 | |
|  | DCA Management Server | DCA  Server | Log files listed in Table 2-5 | |
|  | Analytics Probe Server | Analytics Probe | Log files listed in Table 2-6 | |
|  | RAID Agent | Analytics Probe | See the Hitachi Tuning Manager Log Information Analysis Guide.  /opt/jp1pc/log/jpclog\*  /opt/jp1pc/htnm/logs/\*.log | |
|  | VSS Agent | Analytics Probe | /var/log/hitachi/VirtualStorageSoftwareAgent/log/\*.log /var/log/hitachi/VirtualStorageSoftwareAgent/log/gc/\*  /var/log/hitachi/VirtualStorageSoftwareAgent/installer/\*.log | |
|  | RAID Agent (running on Windows) | Analyzer RAID Agent | Log files listed in Table 2-7 Also, for the logs related to RAID Agent, see the Hitachi Tuning Manager Log Information Analysis Guide.  <Analyzer RAID Agent Install-dir>\jp1pc\log\jpclog\*  <Analyzer RAID Agent Install-dir>\jp1pc\htnm\logs\\*.log <System-root>\HTM\_INST\_LOG\_AGTD\_n.log  <System-root>\HTM\_INST\_LOG\_AGTREST\_n.log  <System-root>\HTM\_UNINST\_LOG\_AGTD\_n.log  <System-root>\HTM\_UNINST\_LOG\_AGTD\_MSI\_n.log  <System-root>\HTM\_UNINST\_LOG\_AGTREST\_n.log Note that the output destination is different because the installation directory is different.  Please read and interpret the directory “System Drive\HiCommand\TuningManager” as <Analyzer RAID Agent Install-dir>. | |
|  | Analyzer Adapter | Analytics Probe | Log files listed in Table 2‑8 |

## Log types

Table 2‑2 Log types

|  |  |  |
| --- | --- | --- |
| No. | Log types | Content |
|  | Task log | Information about tasks starting and stopping, called plug-ins, and task execution results |
|  | Integrated trace log | Integrated trace information for HCS products |
|  | Message log | Major message information for the engine part and commands |
|  | Trace log | Trace information related to databases, commands, and servers |
|  | syslog/Event log  (audit log) | For details, see *(3) syslog/Event log* in Chapter *4*. |

Table 2‑3 Log file list (HIAA server in Windows)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | Server[n].log | Output destinations A and B | Server-related message log and trace log information |
| 2 | Command\_[*command-name*][*n*].log | Output destinations A and B | Command-related message log and trace log information |
| 3 | Database[*n*].log | Output destination B | Database-related trace information |
| 4 | Analytics\_Inst[*n*].log | Output destination C | Installation log information |
| 5 | Analytics\_Uninst[n].logs | Output destination C | Uninstallation log information |
| 6 | hntr2[*n*].log | Output destination D | Integrated trace log information  (which includes other Hitachi product’s log) |
| 7 | SetFWcancel[*n*].log | Output destination A | Windows firewall exception registration information |
| 8 | Event log(windows only) | Output destination E | Windows event log information |

Output destination A: <IAA Install-dir>/logs

Output destination B: <IAA Install-dir>/logs/trace

Output destination C: %windir%/Temp/HITACHI\_Hicommand\_INST\_LOG

Output destination D: <System-root>:/Program Files/Hitachi/HNTRLib2/spool

Output destination E: Can be viewed by the Event Viewer

Table 2‑4 Log file list (HIAA server in Linux)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | Server[n].log | Output destinations A and B | Server-related message log and trace log information |
| 2 | Command\_[*command-name*][*n*].log | Output destinations A and B | Command-related message log and trace log information |
| 3 | Database[*n*].log | Output destination B | Database-related trace information |
| 4 | analyzerbackupprescript.log.[n] | Output destination B | Protector Backup Integration trace log information |
| 5 | analytics\_inst\_<LOG\_DATE>.log | Output destination C | Installation log information |
| 6 | hiaa\_inst\_<LOG\_DATE>.log | Output destination C | Installation log information |
| 7 | analytics\_uninst\_<LOG\_DATE>.log | Output destination C | Uninstallation log information |
| 8 | hiaa\_uninst\_<LOG\_DATE>.log | Output destination C | Uninstallation log information |
| 9 | hntr2[*n*].log | Output destination D | Integrated trace log information  (which includes other Hitachi product’s log) |

Output destination A: <IAA Install-dir>/logs

Output destination B: <IAA Install-dir>/logs/trace

Output destination C: /var/opt/hitachi/HPA (symbolic link is set in /tmp/HIAA/log of the log output destination of version before 4.2)

Output destination D: /var/<install-dir>/HNTRLib2/spool

Table 2‑5 Log file list (DCA server)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | \*.log(eg app.log,  db.log, alerts.log etc ) | Output destination A | DCA Server information |
| 2 | \*.bak | Output destination A | DCA logs Backup files |
| 3 | dcaserver\_inst\_<LOG\_DATE>.log | Output destination B | DCA installation log information |
| 4 | dcaserver\_config\_<LOG\_DATE>.log | Output destination B | The log of the setting script carried out at the time of installation of the DCA |
| 5 | dcaserver\_uninst\_<LOG\_DATE>.log | Output destination B | DCA uninstallation log information |
| 6 | dcaserver\_uninst\_rpm\_<LOG\_DATE>.log | Output destination B | DCA rpm uninstallation log information |

Output destination A: <DCA Install-dir>/DCA/megha/logs

Output destination B: /var/opt/hitachi/HPA (symbolic link is set in /tmp/HIAA/log of the log output destination of version before 4.2)

Table 2‑6 Log file list (Analytics Probe)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | \*.log(eg app.log,  probe.log, alerts.log etc) | Output destination A | Analytics Probe information |
| 2 | \*.bak | Output destination A | Analytics Probe logs Backup files |
| 3 | dcaprobe\_inst\_<LOG\_DATE>.log | Output destination B | Analytics Probe and RAID Agent installation log information |
| 4 | dcaprobe\_config\_<LOG\_DATE>.log | Output destination B | The log of the setting script carried out at the time of installation of the Analytics Probe |
| 5 | dcaprobe\_uninst\_<LOG\_DATE>.log | Output destination B | Analytics Probe and RAID Agent uninstallation log information |
| 6 | dcaprobe\_uninst\_rpm\_<LOG\_DATE>.log | Output destination B | Analytics Probe rpm uninstallation log information |
| 7 | Raid\_uninst\_rpm\_<LOG\_DATE>.log | Output destination B | RAID Agent rpm uninstallation log information |
| 8 | granular-data-collection-api.log | Output destination C | On-demand real time monitoring log information |
| 9 | granular-data-collection-backupprescript.log.[n] | Output destination C | On-demand real time monitoring Protector Backup Integration log information |
| 10 | \*.log (eg access.log, trace.log) | Output destination D | VSS Agent information |
| 11 | vss\_agent\_backupprescript.log.[n] | Output destination D | VSS Agent Protector Backup Integration log information |

Output destination A: <Analytics Probe Install-dir>/Probe/megha/logs

Output destination B: /var/opt/hitachi/HPA (symbolic link is set in /tmp/HIAA/log of the log output destination of version before 4.2)

Output destination C: /var/log/hitachi/Analytics/granular-data-collection-api

Output destination D: /var/log/hitachi/VirtualStorageSoftwareAgent/log

Table 2‑7 Log file list (Analyzer RAID Agent in Windows)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | granular-data-collection-api.log | Output destination A | On-demand real time monitoring log information |
| 2 | AnalyzerRAIDAgent\_Inst\_<LOG\_DATE>.log | Output destination B | Analyzer RAID Agent installation log information |
| 3 | AnalyzerRAIDAgent\_Uninst\_<LOG\_DATE>.log | Output destination B | Analyzer RAID Agent uninstallation log information |

Output destination A: <Analyzer RAID Agent Install-dir>\granular-data-collection-api\log

Output destination B: <System-root>: (for example "C:\")

Table 2‑8 Log file list (Analyzer Adapter)

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Log file name | Output destination | Output information |
| 1 | run.log\*  (eg, run.log, run.log\_<LOG\_DATE>) | Output destination A | run.sh log information (shell script part) |
| 2 | <LOG\_DATE>.[n].log | Output destination B | run.sh log information (Java part) |
| 3 | etl\_gc\_\*.log.[n] (eg etl\_gc\_ondemand.log.[n], etl\_gc\_scheduled.log.[n]) | Output destination C | run.sh garbage collection log information |
| 4 | etl\_error\_<LOG\_DATE>.log | Output destination D | run.sh jvm error log |
| 5 | <LOG\_DATE>.[n].log | Output destination E | registerdb.sh log information (Java part) |
| 6 | etl\_gc\_registering.log.[n] | Output destination F | registerdb.sh garbage collection log information |
| 7 | etl\_error\_<LOG\_DATE>.log | Output destination G | registerdb.sh jvm error log |

Output destination A: /var/log/hitachi/analyzer\_adapter/cli/

Output destination B: /var/log/hitachi/analyzer\_adapter/cli/run

Output destination C: /var/log/hitachi/analyzer\_adapter/cli/run/gc

Output destination D: /var/log/hitachi/analyzer\_adapter/cli/run/jvm\_error

Output destination E: /var/log/hitachi/analyzer\_adapter/cli/registerdb

Output destination F: /var/log/hitachi/analyzer\_adapter/cli/registerdb/gc

Output destination G: /var/log/hitachi/analyzer\_adapter/cli/registerdb/jvm\_error

## Log output levels and output priority

Analytics allows you to specify the output levels for the task log and for other types of Analytics logs according to the log output events.

### HIAA Server log

The table below describes information output to the HIAA server logs at each output level.

In general, you can use the default log level as is. However, you might be asked to increase the log level and collect data to perform a failure reproduction test in a customer environment.

Table 2‑9 Output level for HIAA server logs

|  |  |  |
| --- | --- | --- |
| No. | Log level | Output information |
| 1 | 0 | - Severe error, or server startup failure  - A server starts or stops |
| 2 | 10 | - A command starts or terminates |
| 3 | 20 | - Operation log of the service. |
| 4 | 30 | - Start or end of the main methods.  - Exceptions, errors, and causes of errors.  - Information that helps find a component which caused an error, such as a method  log called from other components. |
| 5 | 40 | - Start or end of all methods  - Information useful for debugging  - Information showing the flow of processing in a component |

Table 2‑10 Default level for HIAA server logs

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Category | Log file name | Default Lv |
| 1 | Log #1 | server.log, command\*[n].log | 20 |
| 2 | Trace Log #2 | Server.log, command\*[n].log, Database.log | 30 |

#1 Output destination A: <IAA Install-dir>/logs

#2 Output destination B: <IAA Install-dir>/logs/trace

### How to change the HIAA server log output level

You can use a definition file (public property: config\_user.properties) to change the output level, file sizes, number of files for each log file type, and filter log data to be output for the output levels. The definition file is stored in the following location:

Definition file: <HIAA Install-dir>/conf/config\_user.properties

After changing the definition file, restart the service to apply the new settings.

Table 2‑11 Definition file (config\_user.properties)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| No. | File name | Attribute name | Description | Specifiable values | Settings | | |
| Min. | Max. | Default |
| 1 | Server[*n*].log | logger.message.server.loglevel | Log Level | Integer value | 0 | 40 | 20 |
| 2 | logger.message.server.MaxBackupIndex | Maximum number of log backup files for a server | Integer value | 1 | 16 | 7 |
| 3 | logger.message.server.MaxFileSize | Maximum log file size (KB) for a server. You can specify numeric values only. | Integer value | 4 | 2097151 | 10240 |
| 4 | Command\_[*command-name*].log | logger.message.command.loglevel | Log Level | Integer value | 0 | 40 | 20 |
| 5 | logger.message.command.MaxBackupIndex | Maximum number of log backup files for a command | Integer value | 1 | 16 | 7 |
| 6 | logger.message.command.MaxFileSize | Maximum log file size (KB) for a command. You can specify numeric values only. | Integer value | 4 | 2097151 | 1024 |

### How to change the DCA server logs and Analytics Probe Logs size settings

You can use a definition file (public property: log.xml) to change file sizes, number of files for each log file type. The definition file is stored in the following location:

Definition file: /usr/local/megha/conf/log.xml

* Property of the number of the file: MaxBackupIndex
* Property of the file size: MaxFileSize

(\*)These properties exist every log file.

|  |
| --- |
| Next is the example which changes the number of the file to 10, and changes the file size to 500MB  <param name="MaxBackupIndex" value="10"/>  <param name="MaxFileSize" value="500MB"/> |

## Format of output messages

Messages are output to log files in the format KNAQ*mmmmm*-*z* , in which KNAQ is a prefix for Analytics server.

For details, see *3 Detailed Log Information*.

# Detailed Log Information

This chapter describes log information required during log analysis.

## HIAA Server log information

### HIAA Server log file detailed information

### Message logs and trace logs

##### **Server[*n*].log/Command[n].log/Database[n].log**

This file contains information about the HIAA Server logs

4181 2016/09/14 04:34:28.843 Analytics 58C46295 6C79957A KNAQ33008-I

The calculation of the dynamic threshold value of the profile content is complete.

**Seq No.**

**Date**

**Time**

**Program name**

**Proc-ID**

**Thread-ID**

**Message text**

**Message ID**

**Event type**

**Figure 3-1 log output format**

**Table 3-1 Items in log format**

|  |  |  |
| --- | --- | --- |
| No. | Item | Description |
| 1 | Seq No. | Sequence number of the message (4 bytes) |
| 2 | Date | Date in *yyyy/mm/dd* format (10 bytes) |
| 3 | Time | Time in *hh:mm:ss:xxx* format (unit of *xxx*: ms) (12 bytes) |
| 4 | Program name | HIAA component name or command name (for example, Analytics) |
| 5 | Proc-ID | Process ID (8 hexadecimal bytes) |
| 6 | Thread-ID | Thread ID (8 hexadecimal bytes) |
| 7 | Message ID | Message ID with a prefix that identifies the program product (16 bytes) |
| 8 | Event type | Type of the event that triggered the trace output (4 bytes) |
| 9 | Message text | Contents of the message (variable length with a maximum of 4,095 bytes) |